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The ETM-2000 series
Easy Temperature Measurement

- ❑ **Complete solutions**
  - Minimize the risk of errors
- ❑ **Flexible solutions**
  - May be supplemented as needs change
- ❑ **Data logging**
  - Collect and document data from critical measure ments
- ❑ **Computer software**
  - Analyze, present, and store critical measurements
- ❑ **Industry protected**
  - The instrument is protected with a rubber boot
- ❑ **Practical details**
  - Instruments may be carried on the belt or placed on a surface
- ❑ **A safe buy**
  - Built-in AMETEK quality and features such as confidence, efficiency, technical support, and service

PRODUCT DESCRIPTION

As a result of the introduction of quality management systems such as ISO-9000, HACCP, etc., as well as increased focus on hygiene, environment and security, demands to minimizing risks and errors have grown. To meet these demands you need reliable and efficient measuring equipment.

AMETEK has composed a number of complete solutions for temperature measurement (the ETM-2000 series) and for pressure measurement (the EPM-2000 series). Each system is a complete kit that is delivered in a practical, lightweight carrying case, making it easy to carry around to the various measuring sites. The configuration eliminates the chance of forgetting probes, contact paste, or the operating manual.

With 5 different systems the ETM-2000 series (Easy Temperature Measurement) covers a broad variety of applications within temperature measurement. The series has 3 systems for thermocouples and 2 for Pt100 probes. Both Pt100 models feature IP67 protection making them very suitable for use in damp rooms in dairies, slaughterhouses and similar food environments. 3 of the 5 systems feature ”Speed-Read” functions which calculate the temperature after just 14 seconds in the medium. This saves the operator time when measuring granulate, powder, and air. Data collection is an option in both the Pt100 system and the thermocouple system. Results are shown on the display or on a PC.

FUNCTIONS - ALL MODELS

ON **Backlight:** The display light is on as long as the key is activated.

HOLD **Display Hold:** Freezes the reading – used when watching the probe is more important than watching the indicator.

Auto switch-off: Auto switch-off after 12 minutes. Extends battery life (auto switch-off does not operate in max/min mode or logging mode. The user can also turn off this feature if not required).

Set-up retention: The instrument switches on with the last settings used.

FUNCTIONS - SPECIFIC MODELS

SPEED READ **SpeedRead>>:** This function calculates the temperature after just 14 seconds in the medium, saving operator time.

A,B A-B I/P MODE **A/B, A-B:** Enables the user to select input channel A, channel B, or the difference between them.

°C/°F **C/F:** Toggle between Celsius and Fahrenheit.

A/R RANGE LOCK **Range lock:** Enables the operator to set the instrument to 1° resolution only.

KTJ NRS **Thermocouple selection:** Change between the different thermocouple types.

MAX/MIN **Max/Min:** Stores maximum, minimum, and average temperatures.

LOG **Logging on demand:** Allows logging up to a maximum of 250 readings.

Pre-set interval logging: Allows readings to be stored automatically at a pre-set time interval.

AMETEK®
CALIBRATION INSTRUMENTS

ETM system 1
GENERAL INDUSTRY

Simple and sturdy instrument to be used wherever temperature measurement is required - bearings, lubricating oil, ambient air, liquids in tanks, operational tests, and start of systems, etc.

Instrument: ETM-2000

Probes: General-purpose probe 2101013
Air probe 2301001
Flexible wire cable probe 2304001
Surface probe 2201002

Including: Contact paste, batteries, protective rubber boot, carrying case with foam inserts, and instructions

ETM system 2
GENERAL INDUSTRY WITH DATA COLLECTION

Same as system 1, but with more functions and choice of probe types. Document your measurements with the data collection function, store min/max values, or save time with the "SpeedRead" function. PC analysis software may be added. (EasyLink software and interface unit are not included).

Instrument: ETM-2098

Probes: See system 1

Including: See system 1

ETM system 3
FOOD INDUSTRY

Precise Pt100 measuring instrument in an IP67 waterproof design. Check frozen meat, cold-storage rooms, fermentation processes, bunker fuel tanks, pasteurization systems, ovens, hotplates, etc.

Instrument: ETM-2024

Probes: General-purpose probe 121908
Air probe 120909
Needle shaped probe 121910

Including: Batteries, rubber protection boot, carrying case with foam inserts, and instructions

ETM system 4
FOOD INDUSTRY WITH DATA COLLECTION

Same as system 3, but with more functions. Document your measurements with the data collection function, store min/max values or save time with the "SpeedRead" function. PC analysis software may be added. (EasyLink software and interface unit are not included).

Instrument: ETM-2084

Probes: See system 3

Including: See system 3

ETM system 5
HEATING AND VENTILATION

Sturdy general purpose system for temperature measurements in energy installations. Adjustment/control, measurements in thermometer wells or direct on pipes (through the insulation), flue gas temperatures on small oil-fired furnaces, radiator surface and room temperature measurements, etc.

Instrument: ETM-2029

Probes: General-purpose probe 2101013
Flue gas 2501023
Flexible probe 2304001
Surface probe 2202001.

Including: See system 1

FUNCTIONAL COMPARISON

System	1	2	3	4	5
Probe type	K	KTJNRS	Pt100	Pt100	KTJNRS
Dual Input		●			
SpeedRead		●	●		●
°C and °F		●	●	●	●
Hold	●	●	●	●	●
Fixed resolution		●	●	●	●
MAX/MIN reading		●	●	●	●
Average		●		●	
Data logging		●		●	
Adjustment from front		●		●	
Temperature range:					
Pt100:	-150 to 800°C (-238 to 1472°F)				
Type K:	-200 to 1350°C (-392 to 2462°F)				
Type T:	-250 to 400°C (-418 to 752°F)				
Type J:	150 to 750°C (302 to 1382°F)				
Type N:	-200 to 1300°C (-392 to 2372°F)				
Type R & S:	0 to 1750°C (32 to 3182°F)				

PHYSICAL SPECIFICATIONS

Operating temperature: ..... –10°C to 50°C (14°F to 122°F)
Model ETM-2000, ETM-2029, ETM-2098: IP65
Model ETM-2024, ETM-2084: IP67
Dimensions: ..... 155 x 67 x 40 mm (6.1 x 2.6 x 1.6 in)
Weight: ..... 180 g (6.4 oz)
Shipping details complete systems:
Dimensions: ..... 395 x 350 x 100 mm (15.5 x 13.8 x 4 in)
Weight app.: ..... 2 Kg (4.4 lb)
CE label ..... YES

FUNCTIONAL SPECIFICATIONS

Accuracy model ETM-2000, ETM-2029, ETM-2098
K, T, J, N above –100°C (-148°F): ..... 0.1% rdg ±0.2°C (0.36°F)
K, T, J, N below –100°C (-148°F): ..... 0.5% rdg ±0.2°C (0.36°F)
R, S: ..... Better than 0.1% F.S. ±0.2% rdg.

Accuracy model ETM-2024, ETM-2084
Pt100: ..... ±0.2% rdg ± 0.1°C (0.18°F)

(All accuracies are ±1 digit)

The above mentioned specification is obtained by combining the accuracy and any uncertainty due to the measurement process. However exclusive of the inaccuracy of the probe.
"SpeedRead": This function reduces the accuracy from Class 0.5 to 2 (CEN TC141/WG12 N42E applies).

Resolution: ..... 0.1° up to 199.9°C (392°F) or else 1°
Battery type: ..... 2 AA or equivalent cells
Battery life: ..... Typically 500 hours
Auto switch-off: ..... 12 minutes
Low battery indication: ..... Symbol appears on display
Cold junction compensation: ..... Yes (system 1,2,5)

PROBE SPECIFICATIONS

Type K (IEC 584 Class 2): ..... ±2.5°C (±3.5°F) or 0.0075 x T_{actual} (Whichever is greatest)

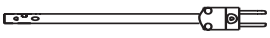
Type Pt100 (IEC 751 Class A): ..... ± 0.15°C + 0.002 x T_{actual} (±0.27°F + 0.002 x T_{actual})

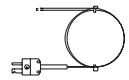
GENERAL-PURPOSE PROBES

PART NO.	DESCRIPTION	TEMPERATURE
121908	Pt100. Probe length 150mm (6in), OD 3mm (0.12in). Acid-proof steel. ** With handle.	-50 to 250°C (-58 to 482°F)
2101030	TC-K. Probe length 1000mm (40in), OD 6mm (0.24in). Heat-resisting steel. ** With handle. * T(water)=4.2 T(air)=87	Max. 1000°C (1832°F) (shortly up to 1150°C (2102°F))
2101003	TC-K. Probe length 150mm (6in), OD 1.5mm (0.04in). Heat-resisting steel. ** With handle. Quick reaction time * T(water)=0.3 T(air)=11	Max. 850°C (1562°F) (shortly up to 950°C) (up to 1742°C)
2101013	TC-K. Data as 2101003, but OD 3mm (0.12in).	Max. 1000°C (1832°F) * T(water)=1.3 T(air)=35
2101025	TC-K. Probe length 400mm (16in), OD 6mm (0.24in) with small OD 1.5mm (0.04in) point. Stay tubes in stainless steel. ** With handle. * T(water)=0.3 T(air)=11 "quick reaction time"	Max. 800°C (1472°F) (the point shortly 950°C (1742°F))

AIR/SPACE PROBES

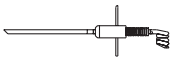
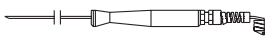
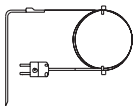
2301001	TC-K. Probe length 100mm (4in), OD 6mm (0.24in). Freely exposed probe element protected against radiation. Stainless steel. Especially for air measurements. ** With handle.	Max. 250°C (482°F)
121909	Pt100. Data as 2301001, but with Pt100 element.	-50 to 250°C (-58 to 482°F)
2301011	TC-K. Data as 2301001, but with an attached plug.	Max. 250°C (482°F)
121964	Pt100. Data as 2301001, but with Pt100 element and an attached plug.	-50 to 250°C (-58 to 482°F)
2304001	TC-K. Flexible wire cable, glass silk insulated 2 x 0.2mm (0.008in). Length 1.5m (9ft).	Max. 400°C (752°F)
2304005	TC-K. As 2304001 but with a length of 5.0m (16.4ft).	Max. 400°C (752°F)
2304010	TC-K. As 2304001 but with a length of 10.0m (33ft).	Max. 400°C (752°F)





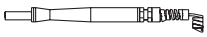
NEEDLE SHAPED PROBES

2401011	TC-K. Probe length 100mm (4in), OD 3mm (0.12in). Needle shaped handle with cross grab for easy removal from frozen meat, etc. All in stainless steel. With spiral cable and plug.	Max. 400°C (752°F)
121910	Pt100. Data as 2401011, but with Pt100 element.	-50 to 250°C (-58 to 482°F)
2401021	TC-K. Probe length 100mm (4in), OD 3mm. (0.12in). Needle shaped for easy removal from fresh food, etc. Stainless steel. ** With handle.	Max. 400°C (752°F)
121963	Pt100. Data as 2401021, but with Pt100 element.	-50 to 250°C (-58 to 482°F)
2401030	TC-K. Oven/roasting probe. Probe length 100mm (4in), OD 3mm (0.12in). Stainless steel. Angled probe with needle shaped point. Heat-resisting lead wires, length 1.5m (9ft) and plug.	Max. 400°C (752°F)

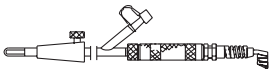
SURFACE PROBES

2201002	TC-K. Probe length 30mm (1.2in), OD 9mm (0.35in). Sturdy probe for general use. ** With handle.	Max. 500°C (932°F)
2202001	TC-K. Probe length 150mm (6in), OD 4mm (0.16in). Well suited for e.g. surface measurement on insulated tubes and at the bottom of thermopockets. ** With handle.	Max. 400°C (752°F)
2202010	TC-K. Angled surface probe. Probe length 200mm (7.9in), OD 4mm (0.16in). Well suited for places that are hard to access.	Max. 400°C (752°F)



FLUE GAS PROBES

2501023	TC-K. Probe length 250mm (10 in), OD 6 mm (0.25 in). Exchangeable thermocouples. Flue gas tap for CO_2 or O_2 measuring equipment. Adjustable screw thread cone with setscrew. The probe has a metal handle, spiral cable and plug.	Max. 800°C (1472°F)



* T = Time constant. The time required to reach 63% of the temperature in water or air. Stated in seconds.
** Mounted with a sturdy plastic handle (tolerates max. 110°C (230°F)). Spiral cable, length 30 to 150cm (1 to 5ft) and plug matching the ETM-2000 series.

December 2000
Issue 1

SYSTEMS & INDICATORS

PART NO.	DESCRIPTION
75-ETM-System 1F	General industry (Fahrenheit) (ETM-2000)
75-ETM-System 1C	General industry (Celcius) (ETM-2000)
75-ETM-System 2	General industry with data collection (ETM-2098)
75-ETM-System 3	Food industry (ETM-2024)
75-ETM-System 4	Food industry with data collection (ETM-2084)
75-ETM-System 5	Heating and ventilation (ETM-2029)

ACCESSORIES & OPTIONS

SYSTEM	PART NO.	DESCRIPTION
3 4	121985	Extension cable - Pt100 probes, 5.0 m (16.5 ft)
1 2 5	121983	Extension cable - Type K probes, 5.0 m (16.5 ft)
2 5	122523	Extension cable - Type N probes, 5.0 m (16.5 ft)
1 2 5	120517	Spare thermocouple plugs Type K (yellow)
2 5	120515	Spare thermocouple plugs Type T (blue)
2 5	120514	Spare thermocouple plugs Type N (orange)
3 4	122525	Spare Pt100 plug for the ETM-2000 series
1 2 5	2206011	Wire adapter for spare thermocouples wire Type K. Plugs on one end and correct materials on the other. Suitable for concrete measurements
2 5	2206012	Data as 2206011 but for Type T.
All	120913	Tube with 100 g contact paste for surface measurements max. 200°C (392°F)
All	105487	Rubber boot for all ETM-2000 instruments
All	105763	Black plastic carrying case w/foam inserts
All	105766	User manual for the ETM-2000 series
2 4	105765	EASY-LINK PC software package with analysis software, interface unit, and RS-232 cable

2 year warranty

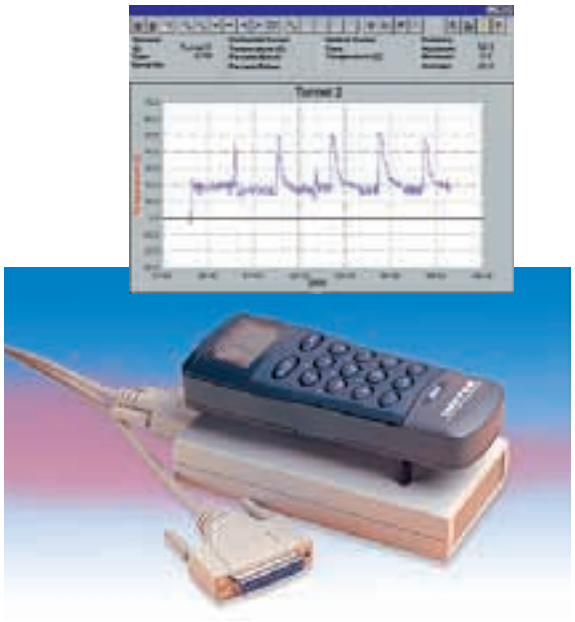
LOGGING

EasyLink software package

The ETM models with logging functions can log up to 250 measurement points. For example, readings can be taken over a two day period once every ten minutes. You may preset the interval between the measurements directly on the key pad of the ETM instrument. All measurements are fully traceable with records on date and time. You may either view the measured data directly from the display of the ETM instruments or download the data to a computer using the EasyLink software.

Models with logging functions have an infrared interface on the back. Via the EasyLink interface unit all data logged may be transferred to a computer. EasyLink is a Windows-based program with clear icons for each different function.

The software can show data in graphical format. Zoom in on data of particular interest and allows for comparison with previous data to illustrate deviations, etc. Analyse, print or download data to spread-sheets, data bases, or directly into reports. Reduce the risk of clerical errors and save keying-in time of results.



AMETEK®
CALIBRATION INSTRUMENTS

AMETEK is a leading global manufacturer of electrical and electromechanical products for niche markets. Listed on the New York Stock Exchange (AME) since 1930, AMETEK's annual sales are approaching $1billion. Operations are in North America, Europe and Asia, with about one third of sales to markets outside the United States.

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ISO 9001 Manufacturer

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